

# Econ 311: Behavioral and Experimental Economics

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# Behavioral Public Policy

# Motivation

- ▶ Motivating question: how can we use nudges (and behavioral economics concepts more generally) at large scale?
  - ▶ Eg, entire neighborhoods, cities, countries?
  - ▶ Cost-effectiveness is key at this size, hence why nudges are so popular
- ▶ Often interested in promoting pro-social activities
  - ▶ Energy conservation
  - ▶ Organ donation
  - ▶ Voting
  - ▶ Public service

# Nudges and Choice Architecture

- ▶ The *choice architecture* refers to how a decision is presented and framed
- ▶ A *nudge* changes the choice architecture without changing the underlying economic choice
- ▶ Characteristics of a nudge?
  - ▶ Does not forbid an option
  - ▶ Does not make an option prohibitively costly
  - ▶ Is cheap to implement and easy to ignore

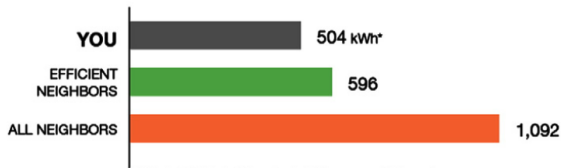
# Social Norms and Energy Conservation

- ▶ Suppose we want to encourage people to use less energy at home
- ▶ One solution: increase energy prices
- ▶ Problem with this approach?
  - ▶ Price increase hurts everyone
  - ▶ We really want to target just those people who are using a lot
- ▶ Alternate solution: social information nudges
  - ▶ OPOWER: company that tracks energy usage for many large utilities
  - ▶ Send home energy reports (HERs) to many households

# Home Energy Reports

## Last Month Neighborhood Comparison

Last month you used **15% LESS** electricity than your efficient neighbors.



\* kWh: A 100-Watt bulb burning for 10 hours uses 1 kilowatt-hour.

## YOUR EFFICIENCY STANDING:



**GREAT**



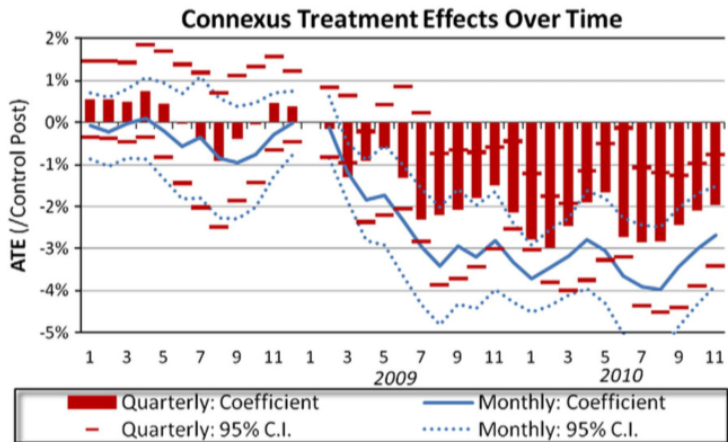
GOOD 😊

BELOW AVERAGE

# Study Details

- ▶ Paper by Allcott (2011)
- ▶ Data
  - ▶ Nearly 600,000 households
  - ▶ 12 different utility companies across United States
  - ▶ 24 different states
- ▶ Design
  - ▶ Collect 12 months of baseline energy consumption data
  - ▶ Treatment group: mailed HER (monthly, bimonthly, or quarterly)
  - ▶ Control group: no mailing
  - ▶ Collect monthly energy usage of each household
- ▶ Predictions?

# Typical Results from A Single Utility





# Overall Results

- ▶ Overall average treatment effect: 2% less consumption relative to control group
  - ▶ Equivalent to turning off air conditioner for extra 30 minutes per day, or turning off 60W light bulb for additional 10 hours per day
  - ▶ Equivalent to 10-20% spike in short-term energy prices or 5% increase in long term energy prices
- ▶ Program is incredibly cost-effective
  - ▶ Define cost effectiveness as money spent (eg stamps and printing costs) per units of energy saved
  - ▶ Cost-effectiveness of HER interventions: 3 cents per kWh saved
  - ▶ At least twice as cost-effective as dynamic pricing programs

# Organ Donation: Background

- ▶ High demand for organ donors
  - ▶ Over 120,000 people in US are on organ waiting lists
  - ▶ About 10,000 added each year to list
  - ▶ About 6,000 die each year while on list
- ▶ Low supply of organ donors
  - ▶ Organ donor share varies widely across states
  - ▶ Most donations come from deceased donors
  - ▶ Only about 1 in 100 donor deaths result in conditions for transplantation
  - ▶ Most donors sign up at state DMV while getting/renewing driver's license

# Two Possible Dimensions to Nudge on

- ▶ Choice framing
  - ▶ Opt-in choice: check a box if want to be a donor, leave blank if don't want to be a donor
  - ▶ Mandated choice: must select "yes" or "no" option; leaving blank is not acceptable (also called active or forced choice)
- ▶ Information
  - ▶ How many lives can be saved
  - ▶ Which organs will be harvested
- ▶ Note that both dimensions are very low-cost: just change the text on a form that is already being produced

# Why do an Experiment?

- ▶ Data on organ donation rates for each state is available
- ▶ Can also get form used in each state
- ▶ Why not use this data to test which versions are better?
  - ▶ Main problem: *selection*
  - ▶ Form contents (choice framing and info content) are not randomly assigned, but chosen by states
  - ▶ States that choose opt-in framing may be systematically different than those that choose mandated choice framing
  - ▶ Thus simply comparing across states will not prove causality

# Connecticut's Driver's License Application (detail)

		2. SEX <input type="checkbox"/> M <input type="checkbox"/> F		3. DATE OF BIRTH	4. HEIGHT ft. in.	5. CO
		7. RESIDENCE ADDRESS (If different)				
CONNECTICUT IDENT?	10. DO YOU WANT TO BE IN THE ORGAN/TISSUE DONOR REGISTRY?	If yes, you are agreeing to be a donor and the designation will be on your license.			DAYTIME PHONE NO	
es <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No				( )	
HER NAMES EVER USED (Alias, Maiden, etc)						
YES (✓)	NO (✓)	FAILED <input type="checkbox"/> KNOWLEDGE <input type="checkbox"/> VISION <input type="checkbox"/> ROAD SKILLS				LOCATION/DA
		IF YES, IN WHAT YEAR(S)?				CONNECTICUT PERMIT, LICEN

# Kessler and Roth (2013)

- ▶ Lab experiment with Massachusetts residents
- ▶ Task: make a *real* decision about whether to join (or stay on) MA organ donor registry
- ▶ 2-by-2 design:
  - ▶ Vary whether opt-in or mandated choice frame
  - ▶ Vary how much information about organ donation is provided

# Interface: Opt-in + Control Info

## THE NATIONAL TRANSPLANTATION AGENCY, ORGAN AND TISSUE DONOR (Figure 12)

ON THIS WEBSITE YOU CAN CHOOSE TO BE AN ORGAN AND TISSUE DONOR IN THE EVENT OF YOUR DEATH.  
IT IS ESTIMATED THAT ONE DONOR CAN SAVE OR ENHANCE THE LIVES OF AS MANY AS 50 PEOPLE BY DONATING ORGANS AND TISSUES.  
THOSE WHO REGISTER AS ORGAN DONORS AGREE TO DONATE ALL THEIR ORGANS AND TISSUES.

IF YOU CONTINUE WITHOUT CHECKING THE BOX, YOU WILL NOT BE REGISTERED AS AN ORGAN AND  
TISSUE DONOR.

☐ I WANT TO REGISTER AS AN ORGAN AND TISSUE DONOR.

CONTINUE

# Interface: Mandated + List Info

ON THIS WEBSITE YOU CAN CHOOSE TO BE AN ORGAN AND TISSUE DONOR IN THE EVENT OF YOUR DEATH.

IT IS ESTIMATED THAT ONE DONOR CAN SAVE OR ENHANCE THE LIVES OF AS MANY AS 50 PEOPLE BY DONATING THE FOLLOWING ORGANS AND TISSUES:

- BONE AND CONNECTIVE TISSUE
- CORNEAS
- EYES
- HEART (FOR VALVES)
- HEART WITH CONNECTIVE TISSUE
- KIDNEYS
- LIVER OR ILLIAC VESSELS
- LUNGS
- PANCREAS
- SKIN
- SMALL INTESTINE
- VEINS

THOSE WHO REGISTER AS ORGAN DONORS AGREE TO DONATE ALL THEIR ORGANS AND TISSUES.

PLEASE SELECT ONE OF THE FOLLOWING OPTIONS.

- ☐ I WANT TO REGISTER AS AN ORGAN AND TISSUE DONOR.
- ☐ I DO NOT WANT TO REGISTER AS AN ORGAN AND TISSUE DONOR.

CONTINUE



# Results from Kessler and Roth

**Table 3: Registration Rates by Treatment**

2 x 2 Design		Choice Frame	
		Opt-In	Mandated Choice
Information Provided	Control	14/55 (25.5%) joined registry 37/37 (100%) remained on registry	10/51 (19.6%) joined registry 30/31 (96.8%) remained on registry
	List of Organs	22/55 (40%) joined registry 39/40 (97.5%) remained on registry	15/51 (29.4%) joined registry 48/48 (100%) remained on registry

- ▶ Summary of main results:
  - ▶ Mandated choice decreases sign-up
  - ▶ List information increases sign-up
- ▶ Open question: What explains the direction or magnitude of these results?